BESSONOV, A. A. COMPUTERS

AUTOMATION OF PRODUCTION PROCESSES BY MEANS OF COMPUTER EQUIPMENT USSR
(Follwoing is the translation of an unsigned article, comprising a conference report, in the Russian-language periodical MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA (Mechanization and Automation of Production), No 9, Moscow, Sep 62, pp 56-58)

In June of the current year a conference was held on the subject of the application of computer techniques in the automation of production processes. The conference was held by the State Committee on Automation and Machine Building under the Council of Ministers USSR, the State Committee on Coordination of Scientific Research Work under the Council of Ministers RSFSR, the scientific-technical society of the instruemtn manufacturing industry, and other organization. Engineer A. A. BESSONOV reported on an electronic extreme reguator, which is an optimal regulator of stepping type, with constant output speed for optimal operation.

SO: JPRS: 16,410 (AUTOMATION OF PRODUCTION PROCESSES BY MEANS OF COMPUTER EQUIPMENT USSR) 29 Nov 62. UNCLASSIFIED.

88127
S/019/60/000/023/055/116
A154/A027

9.3220

AUTHOR: Bessonov, A.A.

TITLE: An Electronic Device for Differentiating the Envelope of an A/c Voltage

PERIODICAL: Byulleten' izobreteniy, 1960, No. 23, pp. 44-45

TEXT: Class 42d, 10. No. 134039 (580831/26 of July 19, 1957). This electronic device for differentiating the envelope of an a/c voltage is distinguished by the fact that, in order to simplify the device and increase its reliability, it contains passive differentiating circuits, each of which is connected in series with an amplifying element and enveloped with negative or positive feedback, making it possible to realize a transfer function of the type:

$$W_p \quad \frac{p^2 + w_o^2}{ap}$$

Card 1/2

An Electronic Device for Differentiating the Envelope of an A/c Voltage

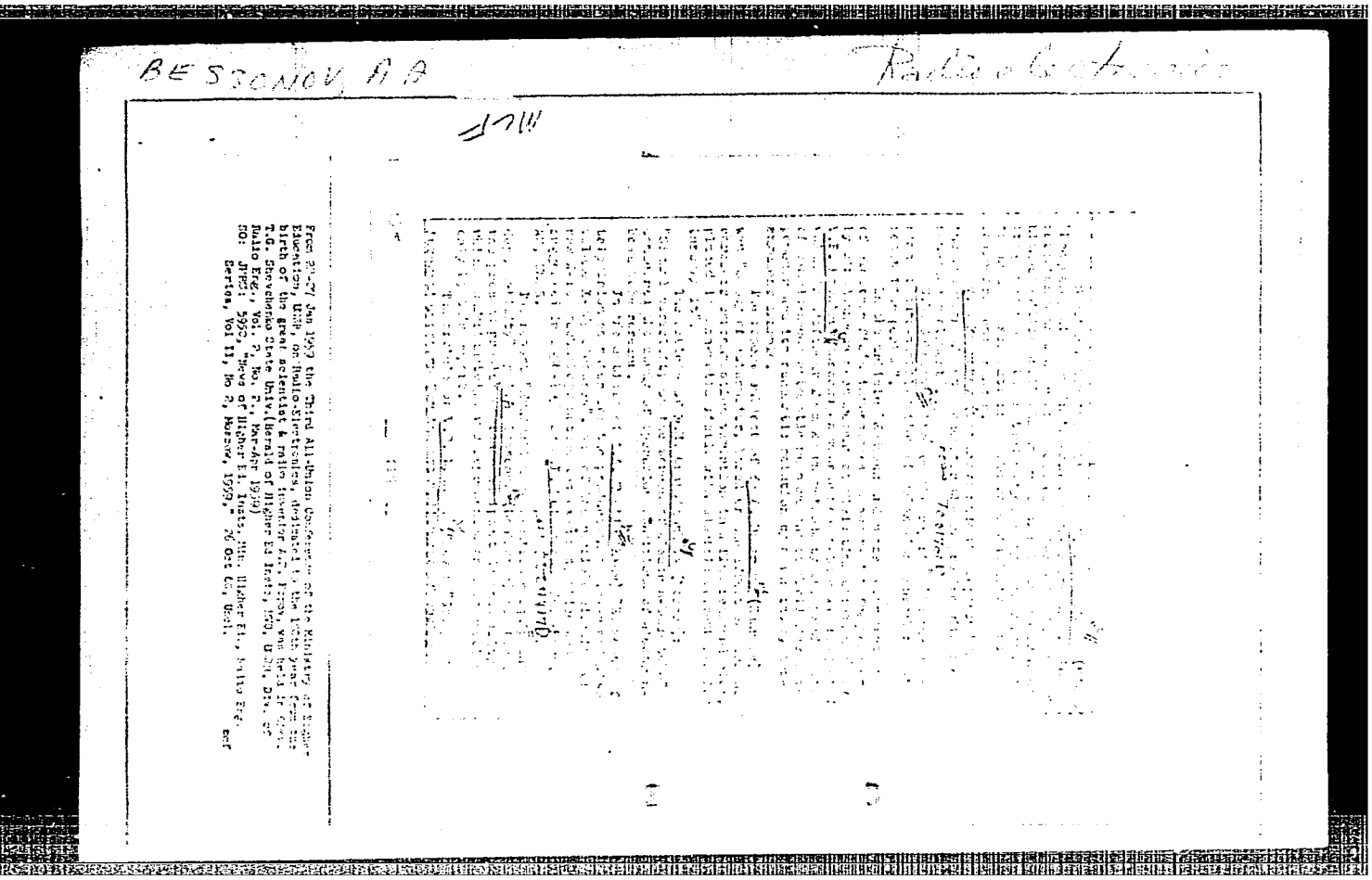
where W_o is the resonance frequency

a is the coefficient

p is the root of the characteristic control of the system, by direct simulation by d/c circuits

2 11

Card 2/2



USSR

ACCESSION NR: AP4001586 S/0286/63/000/016/0065/0065

AUTHOR: Bessonov, A. A.; Globin, N. M.

TITLE: Device for remote measurement and recording of pressure. Class 42, no. 156725

SOURCE: Byul. izobret. i tovarn. znakov, no. 16, 1963, 65

TOPIC TAGS: pressure measurement, remote pressure indicator, pressure indicator, remote control device, remote pressure control, pressure control

ABSTRACT: Unit for the remote measurement and recording of pressure, consisting of a tensometric bridge, one diagonal of which is connected to a parametrically-stabilized oscillator, and the second through an amplifier to a loop oscillograph.

Distinguishing features: In order to fix the desired quantity of remotely-measured pressure, the unit utilizes an amplitude vacuum-tube discriminator with switching resistors in the plate circuit. The discriminator is connected to the delayed blocking-oscillator, which is connected to the signalling block.

Card 1/3

L 9935-63
ACCESSION NR: AP4001586

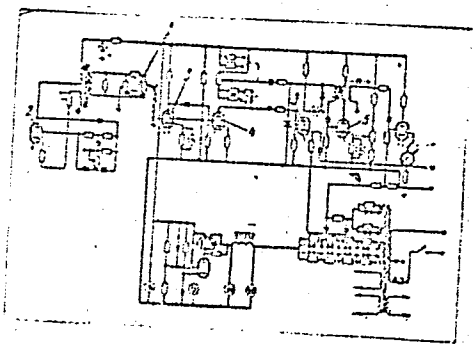
SUBMITTED: 06Jul62 DATE ACQ: 02Dec63 ENCL: 01

SUB CODE: SD NO REF SOV: 000 OTHER: 000

Card 2/3

ACCESSION NR: AP4001586

ENCL: 01



1. tensometric bridge; 2. stabilized oscillator; 3. amplifier; 4. amplitude vacuum-tube discriminator; 5. delayed blocking oscillator.

Card 3/3

USSR

BESSONOV, A. A.

UDC 62-52

Prognozirovaniye Kharakteristik Nadezhnosti Avtomaticheskikh Sistem (Forecasting the Reliability Characteristics of Automated Systems), Leningrad, Energiya Press, 1971, 152 pp, ill.

Translation of Annotation: In this book a study was made of the engineering methods of forecasting and improving the reliability characteristics of automatic control systems during planning and design. In it a comparative evaluation is made of the approaches to solving the problem. Recommendations are formulated with respect to their practical application. Methods and means of constructing systems with improved reliability are investigated. The corresponding principles formulated in the book are illustrated by examples.

The book is designed for engineering and technical workers occupied with planning, design, production, and operation of automated systems. It can be useful to students at the higher institutions of learning during their course and graduate study.

Contents

1/5

USSR

BESSONOV, A. A., Prognozirovaniye Kharakteristik Nadezhnosti Avtomaticheskikh Sistem, Leningrad, Energiya Press, 1971, 152 pp, ill.

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USSR

BESSONOV, A. A., Prognozirovaniye Kharakteristik Nadezhnosti Avtomaticheskikh Sistem, Leningrad, Energiya Press, 1971, 152 pp, ill.

4/5

USSR

UDC 546.791.6-31:66.094.2

BESSONOV, A. F.

"Reduction of γ-UO_3 with Carbon Monoxide"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLIV, No 6, Jun 1971, pp 1404-1406

Abstract: Kinetic laws and phase transformations involved in the reduction of higher uranium oxides have received little attention, even though reduction of these oxides is important in modern uranium industry. Apart from this, the exceptional complexity of the uranium-oxygen system increases the need for further theoretical information in this area.

Some tests were made on reduction of γ-UO_3 samples. It was found that during reduction, conductivity rises rapidly above 245°C, along with formation of U_3O_8, while continued reduction leads to formation of U_4O_3, UO_{2+x} and UO_2, the cubic phases. X-ray analysis of the initial, intermediate and final products of reduction of uranium trioxide with CO revealed the presence of U_3O_8 lines even at the start of the process. Other information, including graphic data, is included in the paper.

1/1

USSR

UDC 546.791.6'21 + 546.264'21

BESSONOV, A. F.

"Reaction of the Amorphous Uranium Trioxide With Carbon Monoxide

Leningrad, Radiokhimiya, Vol 13, No 1, 1971, pp 148-150

Abstract: The reactions occuring between amorphous uranium trioxide and carbon monoxide at high temperatures was studied by means of a roentgenograph and by determination of electrical resistance changes with temperature. Analysis of the data indicates that amorphous uranium trioxide is converted already around 200° to the hexagonal U_3O_8. The intensity of U_3O_8 lines increases initially and begins to drop at 320°. At 340° the U_4O_9 lines appear and at 350° the lines of UO_2. Due to the layering, lines of all forms keep coming up concurrently, and only after the sample is held for some time at 500°, the lines begin to disappear until only those of the UO_2 form remain.

1/1

USSR

UDC 546.791.3-31

BESSONOV, A. F.

"Study of the Decomposition of Amorphous Uranium Trioxide On Heating"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 16, No 1, Jan 71, pp 3-6

Abstract: Decomposition of the peroxide ($UO_4 \cdot nH_2O$) in air at 350°C for 4 hrs was followed by one-hour calcination at 400°C. The product was orange-reddish, its specific surface was 5.6 m^2/g, the density - 5.5 g/cm^3, and its conductivity was 10^{-10} ohm^{-1} cm^{-1}. Experiments were carried out in a high-temperature apparatus registering continuously the resistance, changes in linear dimensions, roentgenograms and thermograms. On the basis of the experimental data obtained, the following phase conversion was proposed for decomposition of UO_3: UO_3 (amorphous) $\xrightarrow{370°C}$ α-UO_3 $\xrightarrow{540°C}$ solid solutions based on UO_3 and mixed uranium oxides $\xrightarrow{630°C}$ α-U_3O_8 850°C high-temperature hexagonal modification U_3O_8 $\xrightarrow{1000°C}$ U_3O_{8-x}.

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USSR

UDC 621.317.742

BESSONOV, A. F., and OLEYNIKOV, G. N., Sevastopol' Instrument Building Institute, Chair of Physics

"Investigation of the Oxidation in Air of Metallic Uranium by High-Temperature Methods"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 5, 1972, pp 104-107

Abstract: A high-temperature method is described for measuring the work function of electrons from the surface of investigated specimens during heating. The experimentally derived x-ray data are discussed by reference to diagrams showing the temperature dependence of the intensity of determined diffraction reflections and the time dependence at a given temperature of the work function of electrons. The results demonstrate the arrangement of layers by thickness of scale in the oxidation process of uranium in air, which is in good agreement with published data. The work function of electrons increases linearly according to the degree of isothermic uranium oxidation. The application of the high-temperature measuring method, which notes only those changes on the surface layers, is of great value in studies of oxidation-reduction processes of metals and oxides. Three figures, ten bibliographic references.

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1/2 011 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--MEASUREMENT OF THE (MECHANICAL) STRENGTH OF CATALYSTS UNDER STATIC CONDITIONS -U-

AUTHOR--BESSONOV, A.I., SHCHUKIN, YE.D.

B

COUNTRY OF INFO--USSR

SOURCE--KINET. KATAL. 1970, 11(1) 215-27

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYST, MECHANICAL STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0201 STEP NO--UR/0195/70/011/001/0215/0227

CIRC ACCESSION NO--AP0106957

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0106857
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN APP. IS CONSTRUCTED FOR THE MEASUREMENT OF THE MECH. STABILITY OF CATALYSTS, SORBENTS, AND CARRIERS.

0123

UNCLASSIFIED

B

USSR

UDC 621.318:549.731

BALBASHOV, A. M., BESSONOV, D. A., CHERVONENKIS, A. YA.

"Study of the Hysteresis Properties of Monocrystals with Garnet Structure"

Dokl. Nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot za 1968-1969 gg. Mosk. energ. in-t, 1970 g. Sekts. Radiotekniches-kaya. Podsekts. ferritovoy SVCh radiofiziki (Reports of Scientific-Engineering Conference on Advances in Scientific-Research Studies in 1968-1969. Moscow Energetics Institute, 1970, Section on Radio Engineering, Subsection on ferrite microwave physics), Moscow, 1969, pp 151-155 (from RZh-Radiotekhnika, No 2, Feb 70, Abstract No 2B145)

Translation: Results are presented of a study of the hysteresis properties of several garnet-structure ferrites intended for use in microwave phase shifters. The study objective was to establish the material composition, the melting regime, and the subsequent thermal and magnetic treating regimes which will increase the

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USSR

BALBASHOV, A. M., et al, Dokl. Nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot za 1968-1969 gg. Mosk. energ. in-t, 1970 g. Sekts. Radiotekhnicheskaya. Podsekts. ferritovoy SVCh radiofiziki, 1969, pp 151-155 (from RZh-Radiotekhnika, No 2, Feb 70, Abstract No 2B145)

rectangularity of the hysteresis loop, reduce the losses, ensure high thermal stability, and short switching time. The basis of the compositions tested was yttrium ferrite garnet, which has been used successfully in various microwave devices but has a low rectangularity factor. All the measurements were made on monocrystals grown by the method of non-crucible zonal melting with optical heating. The substitution selection is justified. Results are described of the synthesis and study of the monocrystals of the resulting systems. Two illustrations. One reference. V.V.

2/2

USSR

UDC: 621.316.174:625.21

BESSONOV, K. S., DUDNICHENKO, A. I., GAMBURG, B. M., KITUSHIN, V. G., MYSLIN, D. A., Siberian Department of the All-Union State Design and Planning and Scientific Research Institute "Energoset'proyekt"

"A Portable Substation"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331464, Division H, filed 19 Jan 68, published 7 Feb 72, p 174

Translation: This Author's Certificate introduces: 1. A 220/110/6 kV portable substation containing an open 220 kV distribution device, an autotransformer connected by the 220 kV line to the supply network transformer, an open 110 kV distribution device and a self-contained 6 kV distribution device. As a distinguishing feature of the patent, the device is made more compact and portable by making the autotransformer of the incomplete-phase type and connecting it to the supply network by two phase conductors of the 220 kV line and connecting the neutral of the supply network transformer to the ungrounded neutral of the autotransformer, the neutrals being connected by an ungrounded cable of the 200 kV line. 2. A modification of this substation in which voltage asymmetry at consumer points is eliminated by connecting a booster transformer in the circuit break.

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--12OCT70

TITLE--CORRELATION OF PHYSICAL BEHAVIOR OF POLYIMIDES WITH THEIR STRUCTURE -U-

AUTHOR-(05)-RUDAKOV, A.P., BESSONOV, M.I., TUICHYEV, SH., KOTON, M.M., FLORINSKIY, F.S.

COUNTRY OF INFO--USSR

B

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(3) 641-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POLYMIDE RESIN, POLYMER STRUCTURE, IMIDE, ELASTICITY, MOLECULAR INTERACTION, CHEMICAL BONDING, CONJUGATED POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0326 STEP NO--UR/0459/70/012/003/0641/0648

CIRC ACCESSION NO--AP0111520

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0111520

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DISCUSSION WITH 11 REFS. OF THE PROPERTY STRUCTURE RELATIONS OF I, WHERE R AND R PRIME ARE TETRAVALENT AND DIVALENT AROMATIC RINGS RESP. OR CONSIST OF SUCH AROMATIC RINGS SEPD. BY O, S, SO SUB2, OR CH SUB2 BRIDGES. THE IMIDE RING, WHICH INTERRUPTS THE CONJUGATION OF THE POLYMER CHAIN ACTS AS A "HINGE" AND INFLUENCES THE ELASTICITY OF I. THE TEMPS. OF I PHASE TRANSITION POINTS DEPEND NOT ONLY ON THE CHAIN ELASTICITY, BUT ALSO ON THE INTERMOL. INTERACTIONS, IN PARTICULAR ON THE BONDING BETWEEN CO GROUPS OF THE IMIDE RINGS.

UNCLASSIFIED

USSR

UDC 678.5.06-419.8:66.085.3/.5

P'YANKOV, G. N., MOROZOV, A. V., OMEL'CHENKO, S. I., KABAKCHI, A. M., BESSONOV, V.G., CHERVETSOVA, I. N., VIDENINA, N. G., DYACHCK, V. T., and GOLODNYY, YU. F., Institute of Physical Chemistry imeni L. V. Pisarzhevskiy, Kiev, Academy of Sciences Ukrainian SSR, and Institute of Chemistry of High Molecular Compounds, Kiev, Academy of Sciences Ukrainian SSR

"Radiation Technology of Manufacturing Glass-Plastics"

Kiev, Khimicheskaya Promyshlennost' Ukrainy, No 4, 1970, pp 8-10

Abstract: Production of glass plastics using electron accelerators as radiation sources is described. The operating principle is explained with an example of the manufacture of a cylindrical sheet of cross winding. The mandrel speed, feed pitch, and dose strength are selected so that during the time of passage of the winding section across beam cross-section the required degree of polymerization of the binder is attained. The degree of polymerization between layers wound on top of each other is regulated by the energy of the impinging radiation and beam current. The source of fast charged particles in the model setup is an accelerator with maximum electron energy of 0.4 Mev. Electrons at this energy ensure radiation polymerization of a 0.2-0.3 mm layer of glass-plastics. In this layer, when the density of the current of the beam is several tens of microamperes per square centimeter, dose strength of 10^6-10^7 rads/sec is produced.

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USSR

UDC: 621.385.633

BESSONOV, V. I., ZHELEZOVSKIY, B. Ye., and TYURIN, S. V.

"Starting Conditions of a Backward Wave Tube With Preliminary Modulation of the Electron Beam"

Kiev, Izvestiya VUZ USSR--Radioelektronika, No 10, 1972, pp 1216-1219

Abstract: This paper considers the operational peculiarities of a backward wave tube oscillator as affected by an external oscillator whose frequency is substantially different; the external signal is propagated in the electron beam in the form of space-charge current waves without coupling with the delay system. The case in which the outside signal is propagated along the beam in the form of a slow space-charge wave is also examined. The theoretical analysis begins with a system of equations describing the process of wave interaction for the case of phase velocity synchronization of the voltage waves in the delay system and the slow waves in the electron beam for a sufficiently large space charge. From this system, equations describing the spatial amplitudes of the waves in the delay system at the tube output are derived, and it is these equations from which the starting conditions of the tube are found.

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Converters

USSR

UDC 621.385.6

ZHELEZOVSKIY, B.YE., MASHNIKOV, V.V., BESSONOV, V.I.

"To A Theory Of An Electron-Beam Frequency Converter"

V sb. Vopr.elektron.tekhn. (Problems Of Electronic Technology--Collection Of Works), Issue 2, Saratov, Saratov University, 1971, pp 52-58 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A83)

Translation: The harmonics are theoretically studied of the current in an electron stream modulated beforehand in a klystron-type gap by signals of two frequencies. The problem is considered in a kinematic approximation. An expression is obtained for the combination components of a bunched current. The conclusion is reached that within wide limits an electron-beam converter can assure satisfactorily simple retuning with respect to frequency. The proposed method of analyzing the harmonics of a current can be useful to a consideration of the nonlinear processes in other electron-beam microwave devices. 4 ref. R.M.

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USSR

UDC: 621.385.63

BESSONOV, V. I., ZHELEZOVSKIY, B. Ye., MIRKIN, V. I.

"Parametric Amplification and Frequency Conversion in a Two-Section Traveling Wave Tube"

Kiev, IVUZ: Radioelektronika, Vol 15, No 3, Mar 72, pp 290-295

Abstract: A two-section parametric traveling wave tube is considered in which the first amplification section is also a noise transformer for cooling the fast waves of the space charge. An analysis of expressions for the coupling coefficients of the waves in the tube shows that the electron stream can be cooled in the first section while simultaneously attaining high values of gain and conversion. Because optimum operating conditions are only slightly different for minimizing the noise factor and maximizing the gain and conversion factor, the two-section parametric traveling wave tube should make an effective low-noise microwave amplifier.

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USSR

UDC 621.384.612

ADO, YU. M., BELOVINTSEV, K. A., BESSONOV, YE. G., and CHERENKOV, P. A.

"Colliding Electron-Positron Beams in a Synchro'ron"

Moscow, Fotomezonnyye i Fotoyadernyye Reaktsii i Metodika Issledovaniya na Sinkhrotrone. Trudy Ordena Lenina Fizicheskogo Instituta im. P. N. Lebedeva Akademii Nauk SSSR, Vol 54, 1971, pp 130-148

Abstract: The article generalizes the main results of research on a method for obtaining colliding electron-positron beams in a synchrotron. There is a detailed discussion of questions related to the effect of a time-varying, driving magnetic field and a low injection energy level on the main parameters of the particle storage process -- radiation damping of oscillation amplitudes, beam lifetime, and storage rate. A description is given of the results of experiments for studying the particle storage process and obtaining colliding electron-positron beams on the FIAN /Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR/ 280-Mev synchrotron. There is also a description of work done in the USSR and abroad to use the counterbeam method for synchrotrons with an energy of ~ 1 Gev or more, including the Italian

USSR

ADO, YU. M., et al., Fotomezonnyye i Fotoyadernyye Reaktsii i Metodika Issledovaniya na Sinkhrotrone. Trudy Ordena Lenina Fizicheskogo Instituta im. P. N. Lebedeva Akademii Nauk SSSR, Vol 54, 1971, pp 130-148

1.5-Gev Adone positron storage ring, the 6-Gev Cambridge electron synchrotron project in the United States, and the cascade storage system developed by staff members of the Photomeson Process Laboratory and Accelerator Laboratory of FIAN. The particle storage process is divided into two stages in the cascade system: 1) particle storage in a booster synchrotron, 2) transfer of electron and positron beams to the main synchrotron at intervals equal to the booster particle storage time. Another variant of the cascade system permits a significant increase in the electron beam conversion ratio through the use of high-energy electrons accelerated in the main synchrotron.

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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--HYGIENIC EVALUATION OF CONDITIONS ATTENDING VISUAL WORK IN SORTING OUT FINE GRADES OF INCANDESCENT LAMP COILS -U-

AUTHOR-(02)-BESSONOVA, A.N., NIKITIN, V.D.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA, 1970, NR 6, PP 7-11

DATE PUBLISHED-------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HUMAN FACTORS ENGINEERING, INDUSTRIAL HYGIENE, SANITARY ENGINEERING, ELECTRIC LAMP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0190 STEP NO--UR/0391/70/000/006/0007/0011

CIRC ACCESSION NO--AP0129446

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129446

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LIGHTING CONDITIONS IN THE METAL CUTTING AND PROCESSING DEPARTMENT OF AN ELECTRIC LAMP PLANT WERE STUDIED AND AN OPHTHALMOLOGICAL EXAMINATION (INCLUDING VISUAL ACUITY, REFRACTION, EYE FUNDUS, ADAPTATION, ACCOMODATION AND CONVERGENCE, FIELD OF VISION) OF 56 DEPARTMENT WORKERS, INCLUDING 9 FEMALE INSPECTORS OF FINE GRADES OF COILS, WAS CARRIED OUT. THE WORK PERFORMED BY THE LATTER IS SHOWN TO BELONG TO THE CATEGORY OF HIGH PRECISION OPERATIONS, PROCEEDING AT THE LIMIT OF THE RESOLVING POWER OF THE EYE. CHANGES OCCURRING IN THE VISUAL SYSTEM OF FEMALE INSPECTORS (SUCH AS SHIFTS IN THE MUSCLE BALANCE TOWARDS EXOPHORIA AND ACCOMODATION SPASMS TAKING PLACE IN SOME OF THEM) ARE LINKED WITH THEIR OCCUPATIONAL ACTIVITIES. RECOMMENDATIONS FOR THE IMPROVEMENT OF BOTH GENERAL AND LOCAL ILLUMINATION WERE WORKED OUT AND PUT INTO EFFECT WITH RESULTANT MATERIAL AMELIORATION OF WORKING CONDITIONS. FACILITY: MEDITSINSKIY INSTITUT, POLITEKHNICHESKIY INSTITUT, TOMSK.

UNCLASSIFIED

USSR

UDC 547.944/945

RAZZAKOVA, D. M., BESSONOVA, I. A., and YUNUSOV, S. YU., Order of the Labor Red Banner Institute of the Chemistry of Natural Products, Academy of Sciences UzSSR

"Folimin -- a Novel Alkaloid from Haplophyllum Foliosum"

Tashkent, Khmiya Prirodnykh Soyedineniy, No 1, 1972, p 133

Abstract: A new alkaloid was isolated from H. foliosum Vved after alumina chromatography of the non-phenolic fraction. This compound had mp 139-140°, was optically inactive and formed a hydrochloride, mp 171-172° and a picrate mp 193-194°. It was named folimin, and on the basis of UV, IR, NMR, and mass-spectroscopic data it was shown to be 4,8-dimethoxy-N-methyl-2-quinolone.

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USSR UDC 547.944/945

UBAYDULLAYEV, K., [redacted] and YUNUSOV, S. YU., Order of the Labor Red Banner Institute of the Chemistry of Natural Products, Acad. Sc. UzSSR

"Haplophyllum Pedicellatum, H. Obtusifolium and H. Bucharicum Alkaloids. Structure of Bukharamine"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 3, 1972, pp 343-346

Abstract: From the overground portion of H. pedicellatum Bge. haplopine and robustin were isolated; H. obtusifolium yielded skimmianin and evoxin. From the mother liquids of all alkaloids of the overground portion of H. bucharicum Litv. it was possible to isolate γ-fagarin, benzamide and a new alkaloid -- bukharamin - an α,β -substituted derivative of α,β-dihydrofuranoquinolone-4, m.p. 223°. It is optically inactive, dissolves well in methanol, chloroform, and with heating in acids. The roots of H. bucharicum contain six known alkaloids: dictamin, skimmianin, γ-fagarin, robustin, haplopin, and bukharain.

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USSR

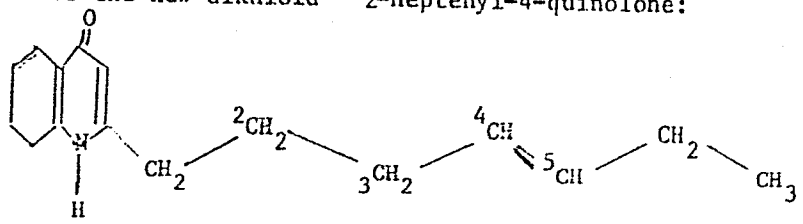
UDC 547.944/945

GULYAMOVA, D. M., BESSONOVA, I. A., YUNUSOV, S. YU., Order of the Red Banner of Labor Institute of the Chemistry of Plant Substances of the Uzbek SSR Academy of Sciences

"Alkaloids of Haplophyllum Acutifolium"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 6, 1971, pp 850-851

Abstract: A study was made of the above-ground part of Haplophyllum acutifolium (Rutaceae family) gathered during the fruiting period in the vicinity of Kora-Kola near Palvan-Zau in the Turkmen SSR. Infrared, ultraviolet and nuclear magnetic resonance spectral data are presented for the alkaloids extracted from this plant. From these data and electron bombardment data the following structure is proposed for the new alkaloid 2-heptenyl-4-quinolone:



The new base has mp 122-123°.

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USSR

UDC 547.944/945

BESSONOVA, I. A., FAYZUTDINOVA, Z. Sh., and YUNUSOV, S. Yu., "Order of the Red Banner of Labor" Institute of the Chemistry of Plant Materials

"Investigation of Alkaloids of Kirgiz Opium"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 6, 1970, pp 711-713

Abstract: The authors studied raw opium and the mother liquor after separation of morphine and narcotine. The raw opium was extracted by water and then by acid. The following alkaloids were chromatographically isolated from the alkaloid sum (21.8%): morphine, codeine, thebaine, papaverine, narcotine, cryptopine, protopine, and also a base with a melting point of 267-268°C, and another with a melting point of 263°C. The latter two resemble alkaloids of the morphine type with respect to UV and mass-spectrometric data. Another non-phenol base with a melting point of 138-139°C was isolated by chromatography on silica gel from alcohol-ammonia mother liquors remaining after extraction of morphine and narcotine. This base was identified as levocanadine. This is the first time that this alkaloid has been isolated from opium.

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USSR

UDC 632.95

BESSONOVA, I. V., VASHKOV, V. I., VOLKOV, Yu. P., VOLKOVA, A. P., ZHUK, Ye. B., TSETLIN, V. M., KLIMENCHUK, V. I., POZHARSKAYA, Ye. B.

"An Insecticide Composition"

USSR Author's Certificate No 288800, filed 13/05/69, published 17/03/72 (Translated from Referativnyy Zhurnal Khimiya, No 24(II), 1972, Abstract No 24N593 P, by T. A. Balyayeva)

Translation: An insecticide is suggested, containing as its active ingredient a synergistic mixture of O, O-dimethyl O-(2,2,-dichlorovinyl) phosphate (I) and an analog of the pyrethrins of the formula

II

(II). Results are presented from determination of the degree of synergism and the insecticidal activity on houseflies. The composition of an aerosol can include I, II, xylene, kerosene and a mixture of freons. The preparate is nontoxic for warm blooded animals.

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1/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--AN EFFECTIVE MIXTURE OF INSECTICIDES ON THE BASIS OF PIRETROIDES AND DDVF -U-
AUTHOR-(05)-BESSONOVA, I.V., VASHKOV, V.I., VOLKOV, YU.P., ZHUK, YA.B., TSETLIN, V.M.
COUNTRY OF INFO--USSR

B

SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI, 1970, VOL 39, NR 1, PP 78-80
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INSECTICIDE, AEROSOL, TOXICITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0082 STEP NO--UR/0358/70/039/001/0078/0080

CIRC ACCESSION NO--AP0103762
UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0103762
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE ACTIVITY OF INSECTICIDE MIXTURES IN AEROSOL FORM AGAINST HOUSE FLIES EVALUATED BY THE COEFFICIENT OF COMBINED TOXICITY DEMONSTRATED MAXIMUM ACTIVITY IN MIXTURES WITH PIRETRINE TO DDVF RATIO OF 7:3 AND PIRETRINES TO DIMETRINE 3:7. A TRIPLE MIXTURE BASED ON DDVF, PIRETRINES AND DIMETRINE TAKEN IN OPTIMAL PROPORTIONS (3:7:16) SHOWED GREATER EFFECTIVENESS THAN DOUBLE MIXTURES, PERMITTING TO REDUCE THE CONCENTRATION OF DDVF 7.77 FOLD, PIRETRINES 5.58 FOLD AND DIMETRINE 27.4 FOLD AS COMPARED WITH THE SAME DRUGS USED SEPARATELY.

UNCLASSIFIED

BESSONOVA, N.V.

III-5. EFFECT OF SUPERCOOLING OF A MELT ON THE STRUCTURE OF SINGLE GERMANIUM CRYSTALS

[Article by E. S. Fal'kevich, Yu. M. Smirnov, N. V. Bessonova, Ye. P. Dudnik, Zaporozh'ye: Novoshtrak, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 29]

The morphology of the phase interface when growing single germanium crystals from a melt characterizes the mechanism of the crystallization process [1].

The degree of supercooling of the melt has an effect on the formation of the crystal and its property.

Data have been obtained which indicate the presence of the interaction of supercooling and the crystal lattice during growth from a molten layer. During Czochralski drawing, the dislocationless structure as a rule is formed with a radial gradient close to zero in the melt at the crystallization front [2]. By varying the degree of supercooling it is possible to achieve the formation of a dislocationless structure with a radial gradient differing significantly from zero.

BIBLIOGRAPHY

1. I. V. Galli, Z. S. Fal'kevich, Proizvodstvo poluprovodnikovogo kremniya (Production of Semiconducting Silicon), Metallurgiya, 1970.

2. Yu. M. Smirnov, Izv. AN SSSR, ser. fizicheskaya (News of the USSR Academy of Sciences, Physics Series), Vol 33, No 12, 2001, 1969.

USSR

UDC 621.355.2.035.24

[redacted], T. N., BOL'SHAKOVA, N. V., ZHIVOTINSKIY, P. B.

"Variation of the Structure of Porous Plates of Lead Batteries During Operation"

Sb. rabot po khim. istochnikam toka. N.-i. akkumulyator. in-t (Collected Works on Chemical Current Sources. Scientific Research Battery Institute), 1971, vyp. 6, 28-34 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L243)

Translation: The variations in volumetric porosity, diameters and the coefficient of convolution of the pores and also the gas filling of the positive and negative plates during charge and discharge of starter lead batteries with different assembly density are defined.

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USSR

UDC 621.355.2.035.3

CHIVOTINSKIY, P. B., and BESSONOVA, T. M.

"Separators for Zinc Batteries"

Sb. rabot no khim. istochnikam toka. Vses. n.-n akkumulyator. in-t (Collection of Works on the Chemical Source of Current. All-Union Scientific Study Institute for Storage Batteries), Vyp 7, 1972, pp 81-91 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L229 by V. S. Levinson)

Translation: The types of separators for lead batteries produced industrially in the USSR are presented. Topics discussed include methods for their production, properties of their separators, their advantages and disadvantages. The prospects are considered for the microporous separators of the 'porovinil' and 'vinipor' types.

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USSR

UDC 535.376

AKISHIN, A. I., BESSONOVA, T. S., and VASIL'YEV, S. S.

"Electron and Proton Radioluminescence of Optical Glasses"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 15, No 3, Sep 71, pp 471-475

Abstract: The authors discuss the results of investigating the different characteristics of the cross section of multicomponent silicate optical glasses by exciting them with electrons and protons. They established that the luminous flux of the radioluminescence of the optical glasses depends linearly on the intensity of the ionizing radiation. The energy yield of luminescence during proton excitation is lower than the energy yield during electron excitation. The basic components of the glasses influencing their luminescence capacity are the oxides of silicon, barium, and lead. They found that with a lengthy electron and proton irradiation of glasses not containing lead oxide an increase takes place in the luminescence yield. The luminescence yield of glasses containing lead oxide remains constant in the irradiation process. At high temperatures, for glasses irradiated by large doses in which there is no lead oxide, thermoluminescence is generated. In all glasses containing lead oxide no thermoluminescence is observed regardless of the degree of their darkening. The radioluminescence spectra of all the glasses, in spite of the formation of color centers and growth in luminescence capacity,

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AKISHIN, A. I., et al., Zhurnal Prikladnoy Spektroskopii, Vol 15, No 3, Sep 71, pp 471-475

are continuous and do no change under lengthy irradiation. The article contains 2 illustrations and 2 tables.

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AA0043456

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UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

241532 DETERMINING THE PLACE OF SHORTING IN COIL WINDING. The terminals of the coil (1) being tested are connected to the source of pulses with short rise-time and 50 oscillations per second (e.g. to thyratron pulse generator fed from commercial power line). The induction coil of the gauge (4) with air gap oriented along the winding is moved across the winding. The minimum indicated by the microammeter (3) points to the position of shorted coils (dotted line on drawing). Then the gauge coil is re-oriented with air gap across the winding and moved along the shorted contour. The position where the indications of the microammeter sharply increase points to the place of shorting.

27.5.67 as 1161695/24-7. Y E.P. BESSUDNOV & O.N. TOPALOV. (19.9.69.) Bul 14/18.4.69. Class 21e. Int. Cl. G 01 r.

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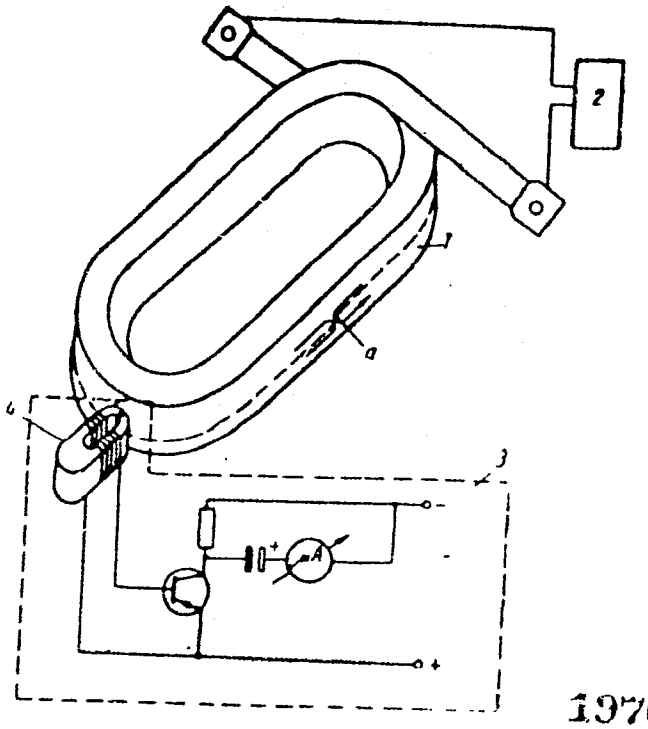

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19761813 gc

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UDC: 547.466:591.85:636.7

PEGEL', V. A., KSENTS, S. M., and BESSUNDNOVA, S. S., Chair of Human and Animal Physiology, Tomsk State University imeni V. V. Kuybyshev

"Blood Amino Acid Level in Dogs After Static and Dynamic Loads"

Moscow, Nauchnyye Doklady Vysshey Shkoly, Biologicheskiye Nauki, No 1, 1971, pp 38-43

Abstract: The equilibrium between proteinsynthesis and proteolysis in the muscles is disturbed by muscular work, and the amino acid content of the blood is affected as a result. Experiments with dogs showed that, after a static load (a package of sand whose weight totaled 60% of the body weight placed on the animals' back), most amino acids in the arterial blood tended to decrease in comparison to those in the inferior vena cava, where cystine, lysine, histidine, aspartic acid, etc. increased. After a dynamic load (running on a treadmill), on the other hand, such amino acids as threonine, aspartic acid, lysine, glutamine, and tyrosine increased, while histidine, serine, glutamic acid, and methionine decreased. The role of the liver in maintaining the amino acid level of the blood during muscular exertion is discussed.

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USSR

UDC 669.721.472(088.8)

CHEPRASOV, I. M., SELEDTSOV, D. K., CHIKODANOV, A. I., BESTAUBAYEV, M. B., PEYSAKHOV, I. L., and BYKHOVER, L. N.

"Method of Purifying Waste Gases"

USSR Author's Certificate No. 267586, Filed 12/05/68, Published 14/07/70, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No.1 G171 P).

Translation: A method is suggested for purifying waste gases to remove Cl_2 and Cl_2-containing products by transmitting the gases through inorganic reagents. In order to increase the degree of purification and simplify the process, the inorganic reagents used are wastes of Ti and its alloys in the form of fine sponge or chips. Example. The gases pumped from the cathode space of a magnesium electrolyzer, at 560°, containing 5-6 mg/l Cl_2, are passed without preliminary drying to a layer of crushed, unheated titanium sponge. The sponge is heated by the gases themselves to 250-280°. All of the Cl_2 contained in the gases is trapped by the sponge, forming lower chlorides of Ti, which are then dechlorinated to produce $TiCl_4$.

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1/4 023 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THE SCIENTIFIC FORECAST OF INTERNATIONAL RELATIONS IN THE LIGHT OF LENIN'S TEACHING -U-

AUTHOR-(02)-BESTUZHEVLADA, I., YERMOLENKO, D.

B

COUNTRY OF INFO--USSR

SOURCE--INTERNATIONAL AFFAIRS, FEBRUARY-MARCH, 1970, NR 2-3, PP 95-97

DATE PUBLISHED-------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--FOREIGN POLICY, ECONOMIC FORECASTING TECHNIQUE, STATISTIC ANALYSIS, GAME THEORY, MATHEMATIC MODEL, COMPUTER APPLICATION, COMPUTER CONTROL SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0379 STEP NO--UR/0665/70/000/02-/0095/0097

CIRC ACCESSION NO--AP0122564

UNCLASSIFIED

2/4 023 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122564

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT WAS ONLY THE DISCOVERY BY MARX AND ENGELS OF THE MATERIALIST VIEW OF HISTORY THAT MADE IT POSSIBLE TO UNDERSTAND THE ESSENCE OF THE OBJECTIVE LAWS AND GET AT THE TURE MOTIVE FORCES BEHIND SOCIAL PROGRESS. THE PROFOUND SCIENTIFIC UNDERSTANDING OF THE ESSENCE OF HUMAN SOCIETY MADE IT POSSIBLE TO GO ON FROM GUESSWORK ABOUT THE FUTURE AND THE PROPHECIES OF THE PRE MARXIAN PERIOD TO A SCIENTIFICALLY GROUNDED ANALYSIS OF THE PROSPECTS FOR MANKIND'S DEVELOPMENT. IT ALSO MADE IT POSSIBLE TO ORGANISE THE PLANNED AND PURPOSEFUL TRANSFORMATION OF SOCIETY. SCIENTISTS HAVE NOW GONE ON TO COMPELX EXTRAPOLATION, WHICH COMBINES MATHEMATICAL STATISTICAL ANALYSIS WITH THE METHODS USED IN THE THEORY OF PROBABILITY, THE THEORY OF LIMITS, THE THEORY OF GAMES, THE THEORY OF MULTIPLES, AND SO ON. SPECIAL FORMULAS HAVE BEEN DEVELOPED WHICH MAKE IT POSSIBLE TO APPROXIMATE WITH GREAT ACCURACY THE DATA OBTAINED THROUGH SIMPLE EXTRAPOLATION. THIS MAKES IT POSSIBLE TO PROJECT A LINE OF DEVELOPMENT INTO THE FUTURE ON THE STRENGTH OF A PROBABLE REPETITION OF THE SAME PROCESSES IN THE SUBSEQUENT PERIOD, AND ALSO TO ACHIEVE GREATER PRECISION ON THE STRENGTH OF SPECIFIC FEATURES WHICH, IN THE OPINION OF THE FORECASTERS, WILL BE CHARACTERISTIC OF THE SELECTED TIME INTERVAL. FORECAST MODELLING IS ANOTHER METHOD THAT IS BEING WIDELY INTRODUCED. THERE HAS BEEN A SHARP INCREASE IN THE IMPORTANCE OF POLLS OF EXPERTS OR GROUPS OF POPULATION IN FRAMING FORECASTS. FINALLY, IN THE PAST FEW YEARS THERE HAS BEEN EXTENSIVE DEVELOPMENT OF WHOLE SYSTEMS BASED ON SINGLE FORECASTS, WHOSE FUNCTION IS TO FORECAST A GIVEN MULTIPLICITY OF OBJECTIVES.

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3/4 023 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122564

ABSTRACT/EXTRACT--(D. M. GVISHIANI AND V. A. LISICHKIN, SYSTEM OF PROGNOSTICATION IN THE PLANNING AND MANAGEMENT OF SCIENTIFIC RESEARCH AND DEVELOPMENT, MOSCOW, 1969, IN RUSSIAN). LET US EXAMINE AN APPROXIMATE PROCEDURE FOR DRAWING UP A FOREIGN POLICY FORECAST, BEARING IN MIND THAT, ACCORDING TO THE CONCRETE CONDITIONS AND THE AVAILABILITY OF INFORMATION, EQUIPMENT, TECHNICAL MEANS AND PERSONNEL, THERE MAY BE A CHANGE IN THE SEQUENCE OF OPERATIONS. IN THE MOST GENERAL TERMS THIS COMES TO THE FOLLOWING: 1. DEFINING THE AIM, TASKS AND TIME INTERVAL OF THE FORECAST. IN SO DOING, IT MUST BE CLEARLY UNDERSTOOD THAT THERE IS A SPECIFIC OPTIMUM TIME INTERVAL FOR FORECASTING EACH OF THE SOCIAL PROCESSES, SO THAT THE MORE PRECISELY THE INTERVAL IS DETERMINED, THE GREATER THE RELIABILITY OF THE FORECAST. 2. CONSTRUCTING THE INITIAL MODEL OF THE PHENOMENON TO BE FORECAST, AND DEFINING THE MAIN PARAMETERS OF THE FORECAST, THE CRITERIA OF THEIR EVALUATION, AND SO ON (MAINLY BY METHODS OF EXPERT EVALUATION). 3. BRINGING OUT THE LEADING TENDENCIES IN THE DEVELOPMENT OF THE GIVEN PHENOMENON AND THEIR COMPLEX EXTRAPOLATION FOR THE ESTABLISHED TIME INTERVAL. FORECASTING TODAY USUALLY ENTAILS EXTRAPOLATION FOR SUCH DATES AS 1975, 1980, 1985 AND 2000. 4. CONSTRUCTING A SERIES OF FORECAST MODELS FOR THE GIVEN DATE AND CONCRETISING THE MINIMUM, MAXIMUM AND OPTIMUM VALUES. 5. POLLING OF EXPERTS AND OR SPECIALLY SELECTED GROUPS OF POPULATION, FOR GREATER PRECISION OF THE MODELS. 6.

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4/4 023 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0122564
ABSTRACT/EXTRACT--DEFINING THE MARGINS BETWEEN THE PROBABLE AND OPTIMUM STATES OF THE PHENOMENON OR OBJECT FORECASTED FOR A GIVEN DATE, WITH SUBSEQUENT FORMULATION OF THE PROBLEMS REQUIRED TO BE SOLVED FOR MAXIMUM APPROXIMATION OF THE TWO STATES. 7. WORKING OUT ON THIS BASIS RECOMMENDATIONS FOR PLANNING, PROGRAMMING AND CONTROL AS A WHOLE. 8. FRESH POLLING OF EXPERTS TO ASSESS THE RECOMMENDATIONS. 9. CONSTRUCTING A SERIES OF POST PROBABILITY MODELS, THAT IS, MODELS REFLECTING THE PROBABLE CONSEQUENCES OF IMPLEMENTATION OF THE DECISIONS RECOMMENDED. 10. FURTHER POLLING OF EXPERTS, ETC. NEEDLESS TO SAY, THIS EXAMPLE DOES NOT EXHAUST ALL THE POSSIBLE VARIANTS FOR DRAWING UP A FORECAST. IDEALLY, FORECASTING SHOULD BE A CONTINUOUS PROCESS PARALLEL TO THE PROCESS OF CONTROL, THUS ENSURING CONSTANT CORRECTION OF EVALUATIONS OF THE ACTS TO BE CARRIED OUT. THIS CAN BE DONE ONLY WHERE THE SCIENTIFIC AND RESEARCH WORK IS UNLIMITED, WITH THE ESTABLISHMENT AND APPLICATION OF SYSTEMS OF INFORMATION AND CONTROL BASED ON THE LATEST SCIENTIFIC ACHIEVEMENTS AND THE USE OF ELECTRONIC COMPUTERS.

UNCLASSIFIED

USSR

UDC 617-001.28-092:519.24

ZHERBIN, YE. A., ZHERBIN, B. N., BESYADOVSKIY, R. A., and IVANOV, K. V.,

"Mathematical Model of Radiation Injury for Applying Experimental Data to Man"

Moscow, Meditsinskaya Radiologiya, Vol 15, No 12, 1970, pp 42-44

Abstract: A comparison of the results of animal experiments shows that the general patterns of development of radiation sickness in animals are fundamentally the same as in man. Common distributions of radiation lesions in different species of animals by degree ofseverity suggest that analogous relationships exist in man. Since the reaction to radiation of a given species varies from individual to individual, the phenomenon is largely a random process. The proposed stochastic model of radiation injury involving the use of a normal distribution function makes it possible to extrapolate data obtained in radiobiological experiments (taking into account species sensitivity) to man on the basis of the common distribution patterns of radiation lesions according to the degree of severity. The degree of severity can be precisely determined from the number of individuals dying in a given period of time after exposure.

ANO 013074

UR9029

AUTHOR-- BETANELI, A., DOCTOR OF TECHNICAL SCIENCES, CHAIRMAN OF THE SCIENTIFIC-TECHNICAL COUNCIL OF THE MINISTRY OF HIGHER AND MIDDLE SPECIALIZED EDUCATION OF THE GEORGIAN REPUBLIC

TITLE-- THE RESEARCH OF INSTITUTIONS OF HIGHER LEARNING IS GROWING AND GAINING POWER

NEWSPAPER-- ZARYA VOSTOKA, JANUARY 20, 1970, P 2, COLS 1-8

ABSTRACT-- THE ARTICLE DISCUSSES THE CONTRIBUTION OF GEORGIAN HIGHER SCHOOLS TO SCIENTIFIC RESEARCH.

IN 1968, A PROJECT LABORATORY /PROBLEMNAYA LABORATORIYA/ OF THE TBILISI STATE UNIVERSITY WAS REORGANIZED AS THE SCIENTIFIC-RESEARCH INSTITUTE OF APPLIED MATHEMATICS.

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PLANS HAVE BEEN MADE TO REORGANIZE THE PROJECT LABORATORY FOR AUTOMATION AND COMPUTATION ENGINEERING OF THE GEORGIAN POLYTECHNIC INSTITUTE AS THE SCIENTIFIC-RESEARCH INSTITUTE OF CONTROL SYSTEMS. THE NEW INSTITUTE WILL BE THE RESEARCH AND COMPUTATION CENTER SERVING ALL CHAIRS OF THE GEORGIAN POLYTECHNIC INSTITUTE. ITS PRINCIPAL AREA OF RESEARCH WILL BE THE DEVELOPMENT OF ALGORITHMS AND CONTROL SYSTEMS. IT WILL NOT DUPLICATE THE EFFORTS OF OTHER GEORGIAN INSTITUTES WORKING IN RELATED AREAS, SUCH AS THE INSTITUTE OF CYBERNETICS OF THE GEORGIAN ACADEMY OF SCIENCES, WHOSE PRIME CONCERN IS PROBLEMS IN PHYSICAL CYBERNETICS, BIONICS AND THOUGHT PROCESSES SMCLN THE INSTITUTE OF ELECTRONICS, AUTOMATION AND TELEMECHANICS WHICH IS CONCERNED WITH IMAGE IDENTIFICATION, NEW AUTOMATED EQUIPMENT AND THE AUTOMATION AND TELEMECHANIZATION OF INDUSTRIAL

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PROCESSES SMCLN AND THE TBILISI SCIENTIFIC-RESEARCH INSTITUTE OF INSTRUMENT CONSTRUCTION AND AUTOMATION WHICH DEVELOPS COMPUTERS.

A SPECIAL RESEARCH LABORATORY FOR PROBLEMS IN TOOL STRENGTH AND RELIABILITY AT THE TBILISI DESIGN-PLANNING AND TECHNOLOGICAL SCIENTIFIC-RESEARCH INSTITUTE OF MACHINE DESIGN AND ELECTRICAL EQUIPMENT /PTNIIME/ OF THE MINISTRY OF THE MACHINE TOOL AND TOOL INDUSTRY, U.S.S.R., WILL COLLABORATE WITH THE CHAIR OF MACHINE DESIGN TECHNOLOGY OF THE TBILISI POLYTECHNIC INSTITUTE.

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USSR

UDC 535.211

BETANELI, A. I., DANILENKO, L. P., LOLADZE, T. N., SEMILETOVA, YE. F., ZHIRYAKOV, B. M., and FANNIBO, A. K., Tbilisi, Moscow

"Study of the Possibility of Additional Alloying of R18 Steel Using a Laser"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 22-26

Abstract: A description is given of experimental results on the introduction of a number of alloying elements (carbon, VK3, VK6, T15K6 mixtures -- standard raw materials for producing solid solutions) into local sections of the surface of R18 high-speed steel with the aid of the quasi-static radiation of a ruby laser. The changes in microstructure and mechanical properties were investigated. Graphs showing the changes in microhardness with depth in the alloyed section according to depth are presented. From X-ray diffraction analyses it was established that the change in lattice parameters in the matrix material occurs as a result of the effect of the alloying elements and the dissolution of carbides in them. The selection of a quasi-continuous mode for local surface alloying proved to be most advantageous because this mode makes it possible to easily control mode parameters and thereby prevent metal failure which would result in the formation of a crater from the laser beam. Three figures, 2 tables, 6 bibliographic references.
1/1

USSR

UDC 669.1:539.375

PETROV, A. I., BETEKHTIN, V. I.

"Time Regularities of Rupture and Creep of Metals in Extension Under Hydrostatic Pressure"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 1, Jul 72, pp 39-47.

Abstract: Study of the rupture of solids has shown that the time of loading influences the strength of all bodies at various temperatures and is a result of the irreversible, thermal-fluctuation process of rupture (breakage of interatomic bonds). This article presents a study of the time dependence of strength and creep under high hydrostatic pressure. It is shown that the primary regularities of rupture and creep of metals in extension are the same at pressures up to 15,000 atm as at atmospheric pressure. The increase in durability, tensile rupture stress and the decrease in creep rate observed under pressure are explained by the increased value of the energy barrier which must be overcome for the thermal fluctuation process of rupture of the interatomic bonds.

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USSR UDC 539.4.019.1-539.4.019.3

BETEKHTIN, V.I., ZHURKOV, S.N. (Leningrad), Physicotechnical Institute imeni A.F. Ioffe, Academy of Sciences, USSR

"The Time and Temperature Dependence of the Strength of Solids"

Kiev, Problemy Prochnosti, No 2, 1971, pp 39-44

Abstract: The article deals with data concerning the relationship of the tensile strength of solids to the time that the material remains in a loaded state, and to the temperature. It is shown that for perfect solids as well as for heterogeneous solids, regardless of the nature of their atomic bond, the indicated relationship is of a uniform nature. An analysis of the relationship indicates that the breakdown of solids is based upon a sequence of elementary acts of dissociation of the atomic bonds, the decisive part in which is played not by an external force, but by thermal fluctuations. 3 figures, 1 table, 43 bibliographic entries.

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USSR

UDC 669.14.018.45:539.12.04

ILYASOV, V. M., BETEKHTIN, V. I., and VOTINOV, S. N., Institute of Physics of Metals of the Academy of Sciences USSR

"Durability and Creep of Irradiated Metals"

[Part of the paper was presented by the authors at the Symposium of Radiation Damage in Reactor Materials at the International Atomic Energy Agency, Vienna, 2-6 Jun 1969]

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 765-772

Abstract: The durability (τ) and creep (ν) of Al, Ni, and Cu, subjected to neutron irradiation of 10^{22} n/cm^2 (E > 1 Mev), were investigated on 0.1-mm-thick plane specimens annealed at 400°C (Al), 600°C (Cu), and 750°C (Ni). It is shown that irradiation brings about a strengthening of Al by increasing τ and decreasing V and a weakening of Ni and Cu by decreasing τ and increasing V. The analysis of coefficients of two functions characterizing τ and ν in relation to the stress and temperature of the investigated materials shows that the effect of neutron irradiation depends on structural conditions

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ILYASOV, V. M., et al., Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 765-772

under which disintegration and creep processes develop and not on changes of the nature and mechanism of the processes. Eight illustr., one table, two formulas, twenty biblio. refs.

2/2

USSR

B

BETEKHTIN, V. I., BAKHTIBAYEV, A. N. (Joffe Physics-Engineering Institute, USSR Academy of Sciences, Leningrad)

"Longevity and Creep of Single Ionic Crystals"

Leningrad, Solid State Physics; February, 1970, pp 429-432

Abstract: The creep and longevity of single haloid crystals of NaCl, KCl, and LiF tested under conditions of single-axis tension in the atmosphere and in a vacuum of $5 \cdot 10^{-6}$ mm Hg were studied.

A close relationship was observed to exist between breakdown and creep -- in particular, the activation energy of these processes which is the same or close to the sublimation temperature of the crystals. The processes of creep and longevity in the atmosphere and in a vacuum appeared to follow the same rule.

The data obtained confirm the basic positions of the kinetic concentration of damage formulated in the works of S. N. Zhurkov and his associates.
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USSR

BETEKHTIN, V. I., BAKHTIBAYEV, A. N, Solid State Physics; February 1970, pp 429-432

The authors express their gratitude to S. N. Zhurkov for his guidance and interest in the work and to A. I. Slutsker for his discussion of the results.

The article includes 4 equations and 4 figures. There are 8 references.

Acc. Nr: AP0048622 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: 21R0181

B

104839h Longevity and creep of ionic single crystals. Betekhtin, V. I.; Bakhtibaev, A. N. (Fiz.-Tekh. Inst. im. Ioffe, Leningrad, USSR). *Fiz. Tverd. Tela* 1970, 12(2), 429-32 (Russ). Longevity and creep were investigated in single crystals of NaCi, KCl, and LiF tested under the conditions of uniaxial stretching in atm. and in vacuum (5×10^{-6} torr). A close relation was obsd. between decompn. and creep; in particular, the energy of activation of these processess is the same and close to the heat of sublimation of the crystals. Regularities of creep and longevity in atm. and vacuum are the same. The data confirm the basic assumptions of the kinetic concept of decompn.
A. Libackyj

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REEL/FRAME
19800349

21 nt

1/2 027 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--LONGEVITY AND CREEP OF SINGLE IONIC CRYSTALS -U-

AUTHOR-(02)-BETEKHTIN, V.I., BAKHTIBAYEV, A.N.

COUNTRY OF INFO--USSR

B

SOURCE--LENINGRAD, SOLID STATE PHYSICS; FEBRUARY, 1970, PP 429-432

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CREEP, IONIC CRYSTAL, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0854 STEP NO--UR/0181/70/000/000/0429/0432

CIRC ACCESSION NO--AP0126526

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126526

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CREEP AND LONGEVITY OF SINGLE HALOID CRYSTALS OF NACL, KCL, AND LIF TESTED UNDER CONDITIONS OF SINGLE AXIS TENSION IN THE ATMOSPHERE AND IN A VACUUM OF 5 TIMES 10 PRIMENEGATIVE6 MM HG WERE STUDIED. A CLOSE RELATIONSHIP WAS OBSERVED TO EXIST BETWEEN BREAKDOWN AND CREEP, IN PARTICULAR, THE ACTIVATION ENERGY OF THESE PROCESSES WHICH IS THE SAME OR CLOSE TO THE SUBLIMATION TEMPERATURE OF THE CRYSTALS. THE PROCESSES OF CREEP AND LONGEVITY IN THE ATMOSPHERE AND IN A VACUUM APPEARED TO FOLLOW THE SAME RULE. THE DATA OBTAINED CONFIRM THE BASIC POSITIONS OF THE KINETIC CONCENTRATION OF DAMAGE FORMULATED IN THE WORKS OF S. N. ZHURKOV AND HIS ASSOCIATES. THE AUTHORS EXPRESS THEIR GRATITUDE TO S. N. ZHURKOV FOR HIS GUIDANCE AND INTEREST IN THE WORK AND TO A. I. SLUTSKER FOR HIS DISCUSSION OF THE RESULTS. FACILITY: JOFFE PHYSICS ENGINEERING INSTITUTE, USSR ACADEMY OF SCIENCES, LENINGRAD.

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002200410003-9"

USSR

AZIMOV, S. A., BETER, YE. V., GULYAMOV, U. G., and LEVIN, A. YA., Institute of Nuclear Physics, Academy of Sciences Uzbek SSR

"Inelastic Pion-Nucleon Interactions With High Multiplicity and a Model of Single-Pion Exchange"

Moscow, Yadernaya Fizika, Vol 14, No 1, Jul 71, pp 240-246

Abstract: The authors propose a model of a single-pion exchange for the inelastic collision $\pi + N \rightarrow n\pi + N$ with any (odd) number of secondary pions. They find the spectrum of the effective mass of the system of secondary pions in an analytical form that is convenient for computation. They compare the results of the computation with the available experimental data for different energies and find a good agreement between the suggested model and the experiment. The authors give 2 variations of the model which they describe mathematically and support with several illustrations of a graphic nature. The article contains 5 figures and 7 bibliographic entries.

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USSR

UDC: 621.375.9:535

BETEROV, I. M., MATYUGIN, Yu. A., MILUSHKIN, G. A., TROSHIN, B. I., and CHEBOTAYEV, V. P.

"Highly Stable Gas Laser Based on Nonlinear Absorption ($\lambda = 0.63\,\mu$)"

Novosibirsk, Avtometriya, No 5, 1972, pp 71-85

Abstract: This is the second part of a series with the title given above, and subtitled "Selection of Oscillation Types in an He-Ne Laser, $\lambda = 0.63\ \mu$," the first part of which appears in this same journal, same issue (pp 59-70). In this part, an analysis is given of two methods for selecting the types of oscillation in gas lasers: the first consists in modifying the optical resonator such that the condition of operation is satisfied for only one type of oscillation; the second consists in using amplification saturation and absorption in the gas under the effects of a strong monochromatic field. A short review of the methods of selecting longitudinal types of oscillation in gas lasers with heterogeneous expansion of amplification lines is discussed. Some results are given of experiments in the investigation of the He-Ne laser spectral radiation at $\lambda = 0.63\ \mu$ ($3s_2$-$2p_4$ Ne transition) together with their

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USSR UDC: 621.375.9:535

BETEROV, I. M., et al, Avtometriya, No 5, 1972, pp 71-85

analysis. The technical characteristics of each element of the laser -- the amplification tube, the inner absorption cell, and the optical laser -- are summarized.

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UDC: 621.375.9:535

BETEROV, I. M., MATYUGIN, Yu. A., MILUSHKIN, G. A., TROSHIN, P. I., and CHEBOTAYEV, V. P.

"Highly Stable Gas Laser Based on Nonlinear Absorption ($\lambda = 0.63\mu$)"

Novosibirsk, Avtometriya, No 5, 1972, pp 59-70

Abstract: This is the first part of a series, entitled "Frequency Stabilization Methods for Powerful Gas Lasers" and is devoted to a detailed description of the design principles for a powerful, highly frequency-stable He-Ne laser operating at a wavelength of 0.63 microns. The structural and technical characteristics of the laser, electronic systems for stabilizing its frequency, and the results of tests made on it are also discussed. The diagram of an experimental apparatus for obtaining narrow resonances in an external absorption cell is given together with various expressions derived on the basis of it. Various methods for stabilizing the frequency of the lasers are shown in three diagrams and are analytically compared using expressions for the sensitivity of the optical discriminators in each. It is emphasized that the choice of optical discriminator is the result of a compromise between technological and physical requirements.
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USSR UDC 621.375.9 : 535

BETEROV, I. M., LISITSYN, V. N., and CHEBOTAYEV, V. P.

"Saturation and Mode Selection Phenomena in He-Ne Lasers. I"

Leningrad, Optika i Spektroskopiya, No. 5, May 71, pp 932-939

Abstract: Two approaches to solving the problem of selecting types of oscillations in gas lasers are analyzed. The first approach consists of a modification of the optical resonator of the laser such that the condition for generation can be satisfied for only one type of oscillation. The complications in the design of various types of resonators make practical work with such lasers quite difficult and require the application of additional systems for self-tuning to maintain a stable frequency and amplitude in the output radiation and require constant control of the frequency of the radiation spectrum, especially with respect to transverse types of higher-order oscillations. Particular difficulties arise if smooth frequency tuning of the radiation over wide limits is necessary. The second approach is less obvious and consists of using the saturation characteristics of amplification and absorption in gases under the action of a strong monochromatic

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BETEROV, I. M., et al, Optika i spektroskopiya, No. 5, May 71, pp 932-939

field. In a previous article, the authors describe the operation of a $\lambda = 0.63\ \mu$ He-Ne laser in which there was effective selection of the types of oscillations with the aid of the absorbing cell introduced into the resonator. This new selection method is based on the use of the absorption property to be saturated effectively under the action of a strong electromagnetic field. The first section of the article presents general principles for the selection of types of oscillations, the practical achievement of which leads to the development of a single-frequency laser with nonlinear absorption; the experimental setup and the basic experimental results as to both selection of types of oscillations and to the physical phenomena accompanying the operation of a strong He-Ne laser with an absorbing cell in the resonator are described. The second part of the work presents a more rigorous examination of selection of types of oscillations, and the results of experiments are discussed. A selection mode of types of oscillations in a laser with essentially nonhomogeneously amplified lines in the absence of any selecting elements is discussed. The homogeneity of saturation of the amplifying medium which occurs in a strong electromagnetic field is used in the method. The effect of collisions and capture of resonance radiation both in the amplifying medium and in the absorbing cell is also discussed from the aspect of selection of types of oscillations.

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USSR

BETEROV, I. M., MATYUGIN, YU. A., and CHEVOTAYEV, V. P., Institute of the Physics of Semiconductors of the Academy of Sciences USSR, Siberian Department

"Measurement of the Relaxation Constants of Levels by the Three-Level Laser Spectroscopy Method"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 12, No. 4, 20 Aug 70, pp 174-177

Abstract: A new method of laser spectroscopy using a three-level scheme which makes it possible to measure relaxation constants of individual levels is proposed. The method is based on measuring the widths of the lines of forced (or spontaneous) resonance shift scattering in a gas. The experiments were conducted on neon transitions $2s_2$-$2p_1$ (λ = 1.52 μ) and $2s_2$-$2p_4$ (λ = 1.15 μ) which have a common level $2s_2$. The experimental setup was generally similar to one described earlier for studying the diffusion of excitation in the capture of resonance radiation. An important difference was that the setup provided for recording the form of a line excluding the effect of the Doppler "cushion" arising from capture of resonance radiation. Analysis of the results extrapolating the field to zero gave the following values for the widths of the scattering lines forward Γ_- and back Γ_0 as a function of pressure:

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BETEROV, I. M., et al, Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fiziki, Vol. 12, No. 4, 20 Aug 70, pp 174-177

$$\Gamma_0 = (87 + 46p) \pm 3 \text{ MHz},$$

$$\Gamma_- = (32 + 17p) \pm 2 \text{ MHz},$$

where p is the neon pressure in mmHg. This gives for the width of the $2s_2$ level

$$\gamma_{2s_2}(27.5 + 14p) \pm 5 \text{ MHz}.$$

An earlier experiment using multichannel techniques gave a value of 20.5±2.1 MHz for γ_{2s_2}; such good agreement with the direct measurement of the width of the $2s_2$ level demonstrates the applicability of the proposed method.

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1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--RESONANT EXCITATION EXCHANGE DURING CAPTURE OF THE RESONANT EMISSION OF A NEON LASER -U-

AUTHOR-(03)-BETEROV, I.M., MATYUGIN, YU.A., CHEBOTAYEV, V.P.

COUNTRY OF INFO--USSR

B

SOURCE--OPTIKA I SPEKTROSKOPIIA, VOL. 28, FEB. 1970, P. 357-368

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEON LASER, PARTICLE CAPTURE, PHOTON, MOLTIMODE LASER, HELIUM NEON LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1478 STEP NO--UR/0051/70/028/000/0357/0368

CIRC ACCESSION NO--AP0112472

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0112472

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF PHENOMENA ASSOCIATED WITH THE CAPTURE OF RESONANT PHOTONS IN THE EMISSION OF A HELIUM NEON LASER. THE INFLUENCE OF PHOTON CAPTURE ON THE ALSER CHARACTERISTICS IS EXAMINED, AND A QUALITATIVE LASER THEORY WHICH TAKES INTO ACCOUNT THE CAPTURE EFFECT IS DEVELOPED. THE THEORY IS USED AS A BASIS FOR DERIVING AN EXPRESSION FOR THE GAIN AS A FUNCTION OF THE FREQUENCY FOR A THREE LEVEL LASER AND AN EXPRESSION FOR THE OUTPUT POWER AS A FUNCTION OF THE FREQUENCY FOR A TWO LEVEL LASER. EXPERIMENTS ARE DESCRIBED IN WHICH CAPTURE OF RESONANT PHOTONS COULD BE OBSERVED DIRECTLY FOR THREE LEVEL LASER. AN EXPERIMENTAL STUDY OF THE CHARACTERISTICS OF THE LAMB DIP AT VARIOUS PRESSURES INDICATES THAT AT GAS PRESSURES ON THE ORDER OF 1 OR 2 MM HG, THE HOMOTENEITY OF SATURATION IS DUE PRIMARILY TO PHOTON CAPTURE AND NOT TO 'STRONG' ATOMIC COLLISIONS.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--ON CAPTURE OF RESONANCE RADIATION IN GAS SUSTEMS -U-

AUTHOR-(04)-BETEROV, I.M., MATYUGIN, YU.A., RAUTIAN, S.G., CHEBOTAYEV, V.P.
COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 4, PP 1243-1258
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RESONANCE ABSORPTION, RADIATIVE CAPTURE, ELECTROMAGNETIC INTERACTION, COLLISION INTEGRAL, VELOCITY DISTRIBUTION, GAS DENSITY, KINETIC EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1722 STEP NO--UR/0056/70/058/004/1243/1258

CIRC ACCESSION NO--AP0106454
UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106454

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A THEORETICAL ANALYSIS AND EXPERIMENTAL INVESTIGATION ARE CARRIED OUT ON THE INTERACTION BETWEEN AN ATOM AND ELECTROMAGNETIC FIELD IN THE PRESENCE OF RESONANCE RADIATION CAPTURE. THE COLLISION INTEGRAL IN THE EQUATION FOR THE DENSITY MATRIX DIAGONAL ELEMENT DUE TO CAPTURE IS SUTDIED. THE INTEGRAL KERNEL IS OF THE KEILSON STORER TYPE. INTEGRATION PERFORMED ON AN ELECTRONIC COMPUTER SHOWS THAT THE WIDTH OF A KERNEL DESCRIBING A SINGLE EMISSION ACT IS OF THE ORDER OF THE MEAN THERMAL VELOCITY BAR V AND THE KERNEL IS ASYMMETRIC. THE SECOND ORDER KERNEL DIFFERS FROM A MAXWELLIAN DISTRIBUTION BY SEVERAL PERCENT. THE KINETIC EQUATION SET UP FOR THE DENSITY MATRIX ELEMENTS IS SOLVED BY TAKING INTO ACCOUNT LEVEL DEGENERACY AND COLLISIONS OF THE RESONANCE EXCHANGE TYPE; THE PRESENCE OF A PLANE MONOCHROMATIC LINEAR POLARIZED STANDING WAVE AND CAPTURE OF RESONANCE RADIAITON ARE ASSUMED. THE VELOCITY DISTRIBUTION OF THE ATOMS IN THE PRESENCE OF THE FIELD HAS A NARROW DIP (OR PEAK) AND BANDS WITH THE USUAL DOPPLER WIDTH K BAR V. AN EXPERIMENT IS DESCRIBED FOR DIRECT OBSERVATION OF EXCITATION DIFFUSION IN VELOCITY SPACE DURING CAPTURE OF RESONANCE RADIATION. THE PARAMETERS OF THE LAMB DIP IN THE GENERATION POWER CURVE ARE ANALYZED FOR X EQUALS 1.15 MU AND LAMBDA EQUALS 0.63 MU. THE STRONG COLLISION HYPOTHESIS CAN BE REJECTED IF RADIATION CAPTURE IS TAKEN INTO ACCOUNT. FACILITY: INST. FIZIKI POLUPROVODNIKOV, SIBIRSK. OTD, AN SSSR.

UNCLASSIFIED

USSR

UDC: 537.591.15

BETEV, B., GEORGIYEV, N., STAMENOV, Y., STANEV, T., YANMINCHEV, V., ASEYKIN, V. S., BOBOVA, V. P., KABANOVA, N. V., ROMAKHIN, V. A., Physics Institute of the Bulgarian Academy of Sciences; Physics Institute of the Soviet Academy of Sciences

"Concerning Some Characteristics of the Muon Component of Extensive Air Showers in Mountain Regions"

Moscow, Izvestiya Akademii Nauk SSSR: Ser. Fizicheskaya, Vol 37, No 7, Jul 73, pp 1484-1487

Abstract: The joint experiment of the Physics Institute of the Soviet Academy of Sciences and the Bulgarian Physics Institute on studying the muon component of extensive air showers was continued in 1971-1972 at the Tien-Shan complex installation. The spatial distribution function for the flux of muons with $E_\mu \geq 5$ GeV in the distance interval of 8-60 m, $\rho_\mu \approx r_\mu^{-0.89\pm0.04}$, as well as the number of muons as related to the number of electrons in the shower $N_\mu \sim N^{0.86\pm0.04}$ were found.

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USSR UDC 616.831-002.931.921-039:616.853]-07

BETIN, YE. M., Chair of Psychiatry, First Moscow Medical Institute imeni I. M. Sechenov

"Diagnosis of Toxoplasmosis Involvement of the Brain in Patients With an Epileptiform Syndrome"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 4, Jul/Aug 70, pp 416-421

Abstract: A total of 174 mental patients with an epileptiform syndrome were examined to determine the cause of their paroxysms. Of these, 82 reacted positively to skin tests for toxoplasmosis (toxoplasmin), and 20 reacted positively to serological tests (complement fixation and indirect hemagglutination). On the basis of laboratory and clinical data, toxoplasmosis was established in 10 cases as the cause of the brain lesions and the origin of the epileptiform syndrome (the disease was acquired in three, congenital in seven). In five cases, a reliable differential diagnosis could not be made between brain disorders of toxoplasmosis etiology and other organic diseases, in which the infection may have been an accompanying factor. In nine cases, toxoplasmosis either aggravated the principal disease or altered the patients' mental state. It is concluded

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BETIN, YE. M., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 4, Jul/Aug 70, pp 416-421

that only repeated positive serological reactions to toxoplasmosis, together with eye and other clinical tests, can confirm the infection as the main cause of brain lesions accompanied by epileptiform convulsions.

USSR UDC 621.355.2(088.8)

ASEYNBERG, E. Ye., CHERNYSHEV, I. I., KRYUCHKOV, A. V., BETS, D. I., MARSHEVA, Z. V.

"A Lead Battery"

USSR Author's Certificate No 300913, Filed 21/08/69, Published 27/05/71, (Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No 2 L213 P by the author's).

Translation: In order to increase the specific electrical characteristics and simplify the technology of manufacture of a lead battery, its body is made as individual vessels connected by barriers, each of which is made as a one-piece unit with the walls of the two neighboring vessels.

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UDC: 621.374.4.001.5

TSEYTLIN, M. B., BETSKIY, O. V., TSITSON', I. T.

"A Theoretical Study of the Multiplier Properties of a Magnetron Amplifier"

Moscow, Radiotekhnika i Elektronika, Vol 26, No 9, Sep 71, pp 1666-1672

Abstract: A system of strict nonlinear equations is derived to describe the behavior of the r-f field in a multistage frequency multiplier with crossed fields based on a traveling-wave magnetron. The resultant equations are used for analyzing various multiplier circuits (a two--stage multiplier with height-invariable interaction space, and with stepwise change of the interaction space, and a three-stage multiplier with intermediate buffer stage). Numerical calculations show that the amplitudes of the harmonics of the r-f current in a traveling-wave magnetron reach a maximum close to the point where the first electrons enter the decelerating system. These amplitudes then decrease continuously, reaching zero at the point corresponding to field saturation conditions. The space charge affects mainly the length required for

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TSEYTLIN, M. B., Radiotekhnika i Elektronika, No 9, 1971, pp 1666-1672

r-f current saturation, and has practically no effect on the maximum amplitudes of the harmonics of the r-f current (at least for small values of the space charge parameter). The results of the calculations also show that the higher time harmonics of the r-f current are fairly effective in the bunched electron beam of a traveling-wave magnetron. These results indicate that frequency multiplication should be quite effective in microwave devices with crossed fields. The authors thank I. V. Lebedev for discussions leading to this research.

USSR

UDC: 621.385.6

TSEYTLIN, M. B., BETSKIY, O. V., and TSITSON', I. T.

"Investigating Type M Hybrid UHF Oscillators in High Amplitude Generation"

Kiev, Izvestiya VUZ SSSR--Radioelektronika, vol. 14, No. 3, 1971, pp 235-242

Abstract: This paper analyzes the operation of two variants of two-section hybrid tubes (backward wave M-traveling wave M, backward wave M-backward wave M) in large amplitude generation on the basis of the nonlinear theory of beam devices with crossed fields. A detailed comparison of hybrid oscillators and the backward wave M-type tube as ordinarily used is given. The comparison indicates that the principal advantages of the hybrid type over the ordinary backward wave tube are: reduced starting and operating currents; the possibility of achieving higher efficiency (by about 15-25%) at lesser electrical lengths of the oscillator; the ability of frequency control with practically no expenditure of energy; complete absence of frequency pulling.

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UDC 621.385.64

TSEYTLIN, M. B., BETSKIY, O. V., and TSITSON', I. T.

"Optimal Choice of Parameters for the Input Section of a Type M Plane Amplifier Cascade"

Kiev, Izvestiya VUZ -- Radioelektronika, Vol 13, No 8, 1970, pp 916-922

Abstract: From earlier papers on the subject of M type UHF amplifiers, it follows that in a cascade amplifier of this type there exists some optimal height of interaction space in the input circuit at which a compromise is reached for the amplification factor, the efficiency, and the length of the instrument. The purpose of this article is to determine this optimal height and its effect on the basic parameters of the amplifier. The analysis is made on the basis of equations in nonlinear theory developed in an earlier paper coauthored by the first and third writers named above (Izv. VUZ -- Radioelektronika, 12, No 9, 1969, p 976). Three basic assumptions are made in the computations: the electron bean is infinitely fine; the mode of operation is adiabatic; and the interaction of the electrons with only one spatial harmonic is taken into account. It is shown that there is no need for the surface of the input stage delay system to be kept close to the electron beam since this neither increases the efficiency nor improves the gain but may lead to a significant loss in the electrical length of the amplifier.

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USSR

UDC 669.295.5:620.183

AGEYEV, N. V., BABAREKO, A. A., RUBINA, Ye. B., KHOREV, A. I., KRASNOZHON, A. I., and BETSOFEN, S. Ya., Moscow

"Effect of the Processing Technology on the Texture of Rolled Sheets of VT-5-1 and VT-14 Titanium Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, No 5, 1973, pp 150-159

Abstract: The development of the texture of α-phase in sheets, 2 mm thick, of VT-5-1 alloy and $\alpha+\beta$-alloy VT-14 on rolling, depending on the reduction degree, the deformation, temperature, and the divisibility of rolling, was studied by the method of polar figures. The results are discussed by reference to the correlation of principal texture components and direct and reverse polar figures. The intensity of the basal plane texture in the α-phase VT-5-1 alloy grows monotonously with increasing reduction degree. In the $\alpha+\beta$ alloy VT-14, the basal texture changes not monotonously by changing deformation conditions;

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AGEYEV, N. V., et al., Izvestiya Akademii Nauk SSSR, No 5, 1973, pp 150-159

this is due to the influence of developing phase transformations $\alpha \rightleftarrows \beta$ and the twinning in the alloy. Cross rolling of the not overheated ingot slab from 6 to 2 mm , in 11-22 passages, at 700°C, or at 800°C by non fractional rolling is considered the optimum rolling system. A perfect basal texture in annealed sheets of VT-5-1 alloy leads to a high hardening effect at two-axial loading. Recrystallization annealing is of little effect on the type of the texture. A deflected basal texture of the VT-14 alloy does not effect a texture hardening in annealed and in dispersion-hardened sheets. Four figures, one table, ten bibliographic references.

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USSR

UDC: 533.6.011

BETYAYEV, S. K.

"Hypersonic Self-Similar Flow Around a Cone Moving According to a Power Law"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamics Institute), 1970, 1, No 3, pp 15-29 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B232)

Translation: A solution is found for the problem of nonstationary flow around a circular cone or a wedge. Streamline flow patterns are established for uniform, decelerated and accelerated motions. It is shown that in the self-similar variables there exists an elliptical region in contact with the shock wave and the body and containing an entropy singularity (Furry point) within it or on the boundary. The rate of expansion of this region approaches zero as the vertex angle of the cone approaches zero or as the adiabatic exponent approaches unity. The problem is solved within the framework of the external asymptotic decomposition which stretches the elliptic zone into a straight line. The numerical solution is found by the theory of small perturbations, and quadrature solutions are found by the

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BETYAYEV, S. K., Uch. zap. Tsentr. aero-gidrodinam. in-ta, 1970, 1, No 3, pp 15-29

thin shock layer theory. The results are used to compute the wave drag factor c_x as a function of time for a cone or wedge of finite dimensions. It is shown that in the case of power-law acceleration, c_x for a cone may increase by a maximum of two times. It is noted that the given problem of self-similar flow around a wedge is equivalent to the problem of stationary hypersonic flow around a wing of diamond cross section with variable (power-law) sweepback. Yu. B. Lifxhits.

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1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT7(

TITLE--SALT SYSTEMS BASED ON LITHIUM CHLORIDE, RUBIDIUM CHLORIDE, CESIUM CHLORIDE, AND URANYL CHLORIDE -U-

AUTHOR-(03)-VOROBEY, M.P., SKIBA, O.V., BEVZ, A.S.

B

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(2), 139

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--LITHIUM CHLORIDE, RUBIDIUM COMPOUND, EUTECTIC, ALKALI METAL, URANIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1574 STEP NO--UR/0089/70/028/002/0139/0139

CIRC ACCESSION NO--AP0120353

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120353

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LICL-YO SUB2 CL SUB2 SYSTEM I CHARACTERIZED BY THE FORMATION OF 2 COMPDS., LI SUB2 UO SUB2 CL SUB4 (M.P. 508DEGREES) AND LI(UO SUB2) SUB3 CL SUB7 (M.P. 525DEGREES); EUTECTIC MIXTS. CONTAIN 26 AND 42.5 MOLE PERCENT UO SUB2 CL SUB2, AND THE RESP. M.PS. ARE 466 AND 450DEGREES. MIXTS. WITH SMALLER THAN OR EQUAL TO 30 MOLE PERCENT UO SUB2 CL SUB2 CONTAIN SOME PENTAVALENT U FORMED IN THE EQUIL. DISSOCN. OF UO SUB2 CL SUB2 TO UO SUB2 CL AND CL SUB2. THE RBCL-UO SUB2 CL SUB2 SYSTEM IS CHARACTERIZED BY THE FORMATIC OF RB SUB2 UO SUB2 CL SUB4, RB(UO SUB2) SUB2 CL SUB5, AND RB SUB4 UO SUB2 CL SUB6, AND BY 3 EUTECTIC MIXTS. CONTG. 30, 38 AND 81.5-82.5 MOLE PERCENT UO SUB2 CL SUB2 AND M. 355, 340, AND 510DEGREES, RESP.; THE COMPDS. FORMED IN THE CSCL-UO SUB2 CL SUB2 SYSTEM ARE OF THE SAME TYPES AS THOSE FORMED IN THE RBCL-UO SUB2 CL SUB2 SYSTEM, WHILE THE EUTECTIC MIXTS. CONTAIN 30, 41.5 AND 82.5 MOLE PERCENT UO SUB2 CL SUB2 ANDM. 395 370, AND 516DEGREES, RESP. NO PENTAVALENT U IS FOUND IN THE SYSTEMS CONTG. RB OR CS; THIS IS ATTRIBUTED TO THE STABILIZING EFFECT OF THE INCREASE IN THE IONIC RADIUS OF THE ALKALI METAL.

UNCLASSIFIED

JPRS 59208
6-73

VIII-4. EXTERNAL SHAPE OF THE DISLOCATION AND DISLOCATIONLESS SINGLE CRYSTALS DURING GROWTH FROM A MELT

[Article by V. E. Bevz, M. I. Osovskiy, K. N. Neymark, E. S. Fal'kevich, Zaporozh'ye; Novosibirsk; III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 104]

A theoretical analysis is made of the effect of the growth conditions on the shape of dislocation and dislocationless single crystals. It is demonstrated that the dislocationless crystals grown under identical conditions must have broader "evident" faces and greater diameter than crystals with dislocations. These differences must increase with a decrease in the radial temperature gradient. The relations obtained were experimentally confirmed when growing single silicon crystals.

BEVZ, V. E.

USSR UDC 621.396.677.3

BEY, N. A., ZIMIN, D. B., KREKHTUNOV, V. M., LOSEV, V. S., SEDENKOV, Ye. G.

"An Element for a Reflecting Antenna Array"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310326, Division H, filed 8 Dec 69, published 26 Jul 71, p 170

Translation: This Author's Certificate introduces an element for a reflecting antenna array which operates with arbitrarily polarized signals. The element consists of a phase shifter, radiators with superimposed phase centers, and sections of transmission line. As a distinguishing feature of the patent, the design is simplified by using in the element a feed-through phase shifter and two radiators with orthogonal polarization characteristics connected to the two outputs of the phase shifter by sections of transmission line which pass signals with fixed polarization.

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Acc. Nr.: AP0029329 Ref. Code: UR 0240

PRIMARY SOURCE: Gigiyena i Sanitariya, 1970, Nr 1, pp 32-36

REMOVAL OF CERTAIN ENTERIC VIRUSES AND BACTERIA FROM SEWAGE IN A CIRCULATION OXIDIZING CHANNEL

Goncharuk, Ye.I.; Grigor'yeva, L.B.; Bey, T.V.; Shulyak, E.V. Shulyak, E.V.; Korchak, G.I.

Investigations have shown the treatment of sewage in a circulation oxidizing channel for two days to be a highly efficient means of decontamination judging by chemical indices. The sewage proved to be free of Coxsackie B5 and ECHO 19 viruses in 24 and 48 hours consecutively and that of Esch. coli bacteriophage in 12 hours in the initial concentration amounting 50 PFU/ml and in 16 hours, when it amounted to 6000—7000 PFU/ml. The pathogenic serotypes of B. coli in a mixture of sewage and active slime were recoved for a period of 3—7 days in the initial contamination equaling 1 million a litre and for 15—18 days if it amounted to 100 million a litre. The Coxsackie B5 virus was recovered from active slime up to the third day and ECHO 19 virus — up to the 5th day. The Esch. coli bacteriophage was present for 15 to 25 days depending on the initial concentration. Disinfection of treated sewages is considered to be an obligatory measure.

1/1 REEL/FRAME 6

USSR UDC 621.314.57

SOKOLOV, S.D., BEY, YU.M., DOBROVOL'SKIS, T.P., LUPYAN, A.G., FIRSOVA, L.D., AYZENSHTEYN, L.S., GURAL'NIK, YA. D.

"Systeom Of Control Of Thyristorized Inverter"

Tr. VNII Zh.-d. transp. (Works Of The All-Union Scientific-Research Institute Of Railroad Transportation), 1970, Issue 420, pp 69-85 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 43665)

Translation: The paper describes a system of control of thyristorized converters [sic] arranged according to the circuit "two reverse stars with an equalizing reactor" or according to a 3-phase bridge scheme which assures turn-on of a large number of series-parallel connected thyristors. In the control circuit, individual (for each thyristor) output current transformers are used. This assures high efficiency and makes it possible to obtain identical currents through the thyristor gates with a considerable dispersion of their input characteristics. The circuit for pulse shaping consists of two 3-loop networks and a discharge thyristor. The first loop produces a steep initial burst, and the remainder the necessary duration of the control pulse. The experimental characteristics are considered of the pulse shapers with various parameters of the current of the output transformers, parameters of the thyristors, and length of the connecting conductors. A block diagram is presented of the modeling on an analog computer of the system for control of thyristors. 10 ill. 2 tab. 4 ref. L.R.

USSR

UDC 632.0

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"Entomology and Conservation of Nature"

Moscow, Zashchita Rasteniy, No 4, 1971, pp 15-19

Abstract: After discussing some general theoretical considerations relating to the preservation and proper utilization of nautral resources, the author outlines the five main areas in which practical efforts should be concentrated and where entonologists have a major role to play: (a) increased productivity of crops and forests; (b) afforestation, creation of shelterbelts, preservation of forests; (c) expansion of national parks; (d) acclimatization of useful species of animals, including insects; (e) instilling in people's minds, starting with the youth, the importance of natural conservation. Although entomologists can and must be active in all these fields, their principal contribution will lie in the direction of and direct participation in the integrated battle to control the approximately 10% of the insect species that do harm to plants, animals, and man while permitting the other 90% to perform their important functions in ecosystems.
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1/2 007 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--INFLUENCE OF INORGANIC NITROGEN FERTILIZERS ON ENZYME ACTIVITY IN THE SOIL -U-

AUTHOR--BEYBIYENKO, N.V.

B

COUNTRY OF INFO--USSR

SOURCE--POCHVOVEDENIE 1970, (2), 87-93

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, AGRICULTURE

TOPIC TAGS--NITROGEN FERTILIZER, ENZYME ACTIVITY, UREASE, SOIL CHEMISTRY, CATALASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0383 STEP NO--UR/0500/70/000/002/0087/0093

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2/2 007 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWO FERTILIZERS, KNO SUB3 AND (NH SUB4)SUB2 SO SUB4, WERE INVESTIGATED IN POT EXPTS. FOR THEIR EFFECTS ON SOIL ENZYMES, SUCH AS CATALASE, UREASE, ASPARAGINASE, AND PROTEASE. THE SOILS CONTAINED SUFFICIENT P SUB2 O SUB4 SO THAT NO DECLINE OF ANY ENZYME ACTIVITY COULD BE ATTRIBUTED TO A LACK THEREOF. THE VALUES DETD. FLUCTUATE WITH THE KIND OF SOIL AND WITH THE AMTS. OF PLANT FOOD ALREADY PRESENT PRIOR TO THE EXPTS., BUT IT CAN BE GENERALLY PRESENT PRIOR TO THE EXPTS., BUT IT CAN BE GENERALLY STATES THAT (NH SUB4)SUB2 SO SUB4 SIGNIFICANTLY INCREASES THE ACTIVITIES OF CATALASE, ASPARAGINASE, AND UREASE, WHEREAS KNO SUB3 DOES NOT HAVE TOO GREAT A STIMULATING EFFECT FOR ASPARAGINASE AND UREASE. BOTH COMPDS. INCREASE THE PROTEASE ACTIVITY TO ABOUT THE SAME EXTENT. FACILITY: VSES. NAUCH.-ISSLED. INST. SEL'SKOKHOZ. MIKROBIOL., LENINGRAD, USSR.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INCREASE IN THE STABILITY OF ADHESION PROPERTIES IN A POLYETHYLENE METAL SYSTEM -U-

AUTHOR-(05)-BEIDER, E.YA., VINOGRADOVA, L.M., GUDIMOV, M.M., YEFREMOVA, Z.A., KOROLEV, A.YA.

COUNTRY OF INFO--USSR

B

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 222-5

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ADHESION, POLYETHYLENE, ALUMINUM SURFACE, ISOCYANATE, ORGANIC SILANE, OLEIC ACID, METAL TO NONMETAL BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0666 STEP NO--UR/0460/70/012/003/0222/0225

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2/2 023 UNCLASSIFIED PROCESSING DATE--30OCT7(

CIRC ACCESSION NO--AP0124338

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN AL SURFACE TREATED WITH TOLYLENE DIISOCYANATE, GAMMA AMINO PROPYLTRIETHOXYSILANE, AND OLEIC ACII EXHIBITED SUPERIOR ADHESION TO POLYETHYLENE DEPOSITED BY EDDY SPRAYING. THE MODIFIED SURFACES WERE ALSO RESISTANT TO LONG TERM EXPOSURE TO H SUB2 O. A MODIFICATION MECHANISM IS PROPOSED.

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USSR UDC: 621.791.947.55:546.212(260)

BEYDER, B. D., Candidate of Technical Sciences, PROSVIRIN, A. P., Engineer, EZROKHIN, A. B., Engineer, and UZILEVSKIY, YU. A., Engineer

"Plasma-Arc Cutting in Sea Water"

Moscow, Svarochnoye Proizvodstvo, No 6, Jun 73, pp 52-53

Abstract: The authors determine the requirements for a plasma cutting torch which can work in sea water. A cutting torch is tested which can ensure the reliable parting of hull grades of steel up to 40mm thick in sea water with a salinity of 20 percent at a depth of 10m. The cutting is done at a current of 500-520amp and an arc voltage of 120-140v. The cutting rate of the plasma-arc is 2-5 times greater and the productivity is 3-8.5 times greater than is the case with electro-oxygen cutting.

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TKACHEV, V. I., BEYDER, E. YA., LITVIN, A. K., GUDIMOV, M. M., AND SOSHKO, A. I., All Union Scientific Research Institute of Aviation Materials, Moscow, Physico-Mechanical Institute Academy of Sciences UkrSSR, L'vov

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 9, No 5, 1973, pp 102-103

Abstract: The optimum conditions for the heat treatment of steel, before applying a polyethylene coating to increase its fatigue strength in an aggressive corrosive medium, were investigated on 30KhGSNA steel specimens, one part of which was coated with polyethylene. The composition of the coated specimens was selected so as to eliminate the effect of the coating, i.e., that the lasting quality of coated and uncoated specimens in air was the same. The investigation results are analyzed by reference to tabulated data, showing the longevity of coated and uncoated specimens in air, 30% NaCl, and in normal H_2SO_4, at low and high tempering temperatures, and diagrams of the effects of tempering temperatures on two coefficients characterizing the influence of the medium on the longevity relation in cycles of coated and uncoated specimens. The investigations demonstrated that poly-

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